Volunteer Lake Assessment Program Individual Lake Reports

GRANITE LAKE, STODDARD, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	2,432	**Max. Depth (m):**	33.6	**Flushing Rate (yr^{-1}):**	0.7
Surface Area (Ac.):	228	**Mean Depth (m):**	9.8	**P Retention Coef:**	0.61
Shore Length (m):	4,500	**Volume (m^3):**	9,027,000	**Elevation (ft):**	1278

TROPHIC CLASSIFICATION

Year	Trophic class
1996	OLIGOTROPHIC
2006	OLIGOTROPHIC

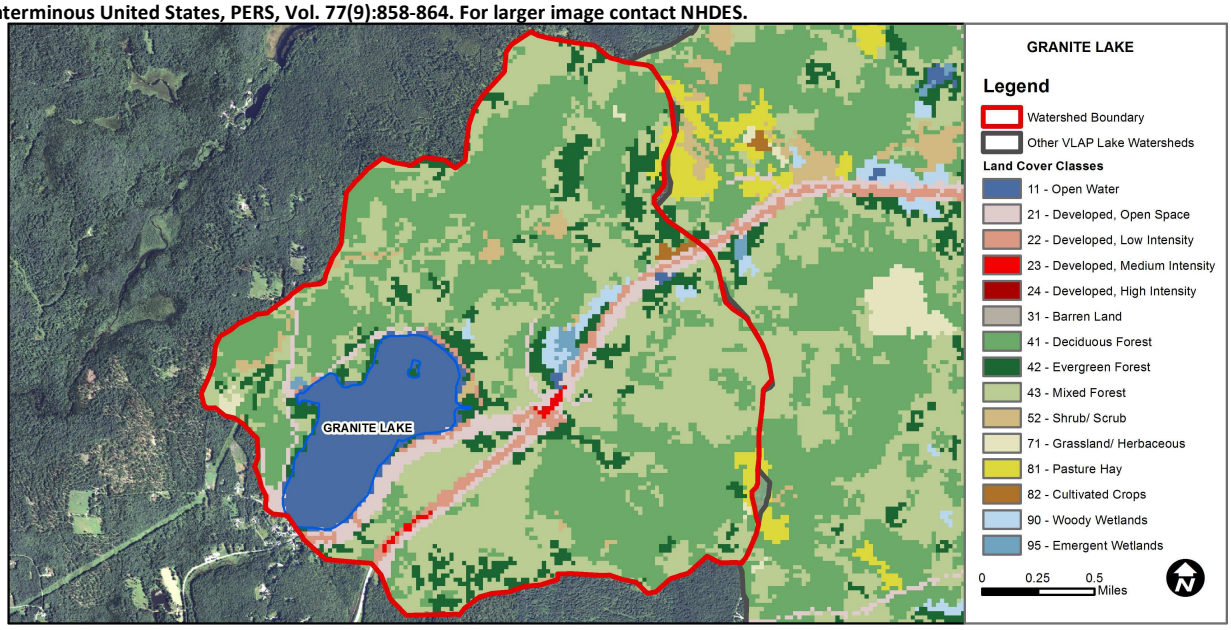
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator and the chlorophyll a indicator is okay.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	Oxygen, Dissolved	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Dissolved oxygen satura	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Chlorophyll-a	Very Good	The calculated median is from 5 or more samples and is <= 1/2 indicator.
Primary Contact Recreation	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
	Chlorophyll-a	Very Good	There are a total of at least 10 samples with 0 exceedances of indicator.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	9.46	Barren Land	0	Grassland/Herbaceous	0.3
Developed-Open Space	5	Deciduous Forest	36.11	Pasture Hay	0.67
Developed-Low Intensity	2.11	Evergreen Forest	8.75	Cultivated Crops	0.19
Developed-Medium Intensity	0.27	Mixed Forest	34.65	Woody Wetlands	0.87
Developed-High Intensity	0	Shrub-Scrub	1.22	Emergent Wetlands	0.36

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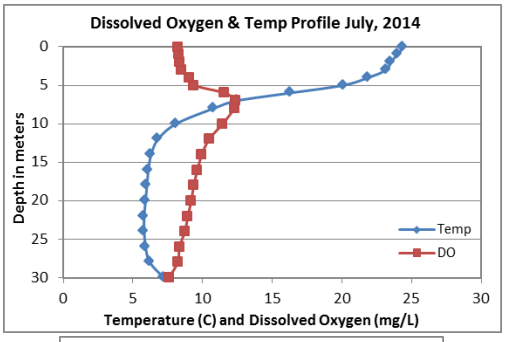
2014 Data Summary

Observations and Recommendations (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **Chlorophyll-a:** Chlorophyll levels remained stable and low from July through September. Average chlorophyll levels were much less than the state median and historical trend analysis indicates relatively stable chlorophyll with moderate variability between years.
- **Conductivity/Chloride:** Deep spot conductivity and chloride levels were slightly greater than the state medians, however not above a level of concern. Historical trend analysis indicates relatively stable epilimnetic (upper water layer) conductivity with moderate variability between years. 586 and 603 Granite Lake Rd., Boat Ramp and Townline Inlet conductivity levels were elevated due to influences from Rt. 9. All other tributary conductivity levels were relatively low.
- **Total Phosphorus:** Deep spot phosphorus levels were stable and low from June through September. Average epilimnetic phosphorus decreased from 2013 and was much less than the state median. Historical trend analysis indicates highly variable epilimnetic phosphorus since monitoring began. In general tributary phosphorus levels were low. However, storm event sampling of a tributary system in July indicated above average and elevated phosphorus and turbidity in the Inlet, Little Granite Lake Outlet and Nye Meadow Outlet. South St. Bridge phosphorus and turbidity remained low during the storm event sampling.
- **Transparency:** Transparency was good and much better than the state median. Transparency measured without the viewscope (NVS) decreased in July due to wave action. Transparency measured with the viewscope (VS) was slightly better than that without and likely a better representation of conditions. Historical trend analysis indicates relatively stable transparency with moderate variability between years.
- **Turbidity:** Epilimnetic turbidity was above average in July following significant storm events. Metalimnetic (middle water layer) turbidity was also slightly above average in July likely due to a layer of algae. Hypolimnetic (lower water layer) turbidity was low. North Shore Rd., Granite Lake Rd., Outlet, and Townline Inlet tributary turbidities were low. Inlet, Little Granite Lake and Nye Meadow Outlet turbidities were elevated in early and mid-July following significant storm events.
- **pH:** Deep spot pH levels were less than desirable range 6.5-8.0 units and generally fluctuate below desirable levels. Historical trend analysis indicates highly variable epilimnetic phosphorus since monitoring began. In general, tributary pH levels were less than desirable.
- **Recommended Actions:** Stormwater runoff continues to be an issue. Logging operations impacted stream water quality during significant storm events and operations were inspected by state officials to help correct the problems. Great job collecting stormwater samples to assess impacts to the streams and lake. Lake and watershed residents can also manage stormwater runoff from their properties. DES' "NH Homeowner's Guide to Stormwater Management" is a great resource. Keep up the great work!



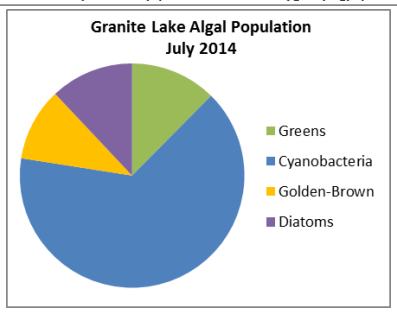


Table 1. 2014 Average Water Quality Data for GRANITE LAKE

Station Name	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	Total P ug/l	Trans. m		Turb. ntu	pH
						NVS	VS		
Epilimnion	2.27	1.69	10	62.6	3	7.27	7.80	0.48	6.34
Metalimnion				63.5	3			0.70	6.24
Hypolimnion				65.3	3			0.43	6.04
305 North Shore Rd.				19.6	5			0.45	6.28
395 North Shore Rd.				24.0	6			0.20	6.43
586 Granite Lake Rd.				246.0	3			0.61	6.40
603 Granite Lake Rd.				110.3	3			0.46	4.58
Boat Ramp				179.5	6			1.04	6.69
Inlet			14	75.8	14			4.14	6.12
Little Granite Lk. Outlet			5	34.2	14			7.42	5.92
North Shore End				17.3	7			0.49	6.37
Nye Meadow Outlet			4	34.4	16			9.56	5.81
Outlet In Stream				63.8	3			0.43	6.45
South St. Bridge				15.4	6			1.35	5.86
Townline Inlet			32	171.9	3			0.27	5.37

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

Historical Water Quality Trend Analysis

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Stable	Trend not significant; data moderately variable.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
pH (epilimnion)	Stable	Trend not significant; data highly variable.	Transparency	Stable	Trend not significant; data moderately variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data highly variable.